From: Ohl, Matthew
To: Bradley, Lisa
Subject: FW: PINES Group review comments re: Radiation
Date: Thursday, May 09, 2013 8:59:46 AM
Attachments: Responses on Technical Review for EPA FS, April 13 2013.doc

FYI

From: Paul Kysel [Exemption 6]
Sent: Thursday, May 09, 2013 8:10 AM
To: Ohl, Matthew
Cc: Mark Hutson; Larry Jensen; Chuck Norris
Subject: PINES Group review comments re: Radiation

Matt, please consider the following comments / expressed concerns from the PINES Group in regards to your recent letter (Responses to EPA Comments on Technical Review for FS, Matthew J. Ohl letter to Lisa JN Bradley, dated April 3, 2013) specifically regarding the presence of radiation at the Pines site.

We request USEPA's feedback regarding these expressed comments and as previously expressed we request that USEPA not utilize the review services of Eli Port or his firm,

Paul Kysel, PINES Group President

Responses to EPA Comments on Technical Review for FS
See Matthew J. Ohl letter to Lisa JN Bradley, April 3, 2013

By Larry Jensen
PINES Group
April 13, 2013

GENERAL COMMENTS

The PINES Group supports a new background soil collection. This will establish a common base between these background soil samples and the additional soil samples to be collected.

The PINES Group supports collection of a new set of groundwater (drinking water) samples to update the last sampling in 2006. Such samples must include all constituents regulated by the U.S. Environmental Protection Agency's (USEPA) drinking water regulations (Title 40, Part 141, Code of Federal Regulations, 40 CFR 141), including all radionuclides.

SPECIFIC COMMENTS

Page 3, Comment #2 - The PINES Group supports application of 40 CFR 141 and 40 CFR 192 as relevant and appropriate requirements for Pines groundwater (drinking water). Radionuclides, not omitting uranium-238, uranium-234, uranium-235, radium-226, and radium-228, must be covered.

Page 5, Comment # 5 - This comment states that the 40 CFR 192.12(a) PRG was intended to limit the risk from inhaling radon decay products within homes built on land contaminated with radium. Thus, where the expanded soil collections substantiate soil contamination from radiums the corresponding buildings (homes, municipal buildings, industrial buildings, etc.) should be sampled and judged for radon by USEPA protocols.

Page 5, Comment #7 - The PINES Group feels that visual inspections for CCBs are vague, subjective, and non-quantitative. We concur that "no analytical data have been collected to represent residential risks." Scientifically and legally defensible data must be obtained for not only residential sites, but municipal and industrial sites as well since all are potentially at risk from the same contaminants.

Page 9, Comment #20 The PINES Group agrees that the residential yard confirmatory sampling plan needs to be revised to incorporate subsurface soils.

* Such a plan must not be restricted to residential properties as the PINES 2012 radiation count rate survey data indicates contamination on municipal property (Pines Town Hall) and on private property (land just north of the Pines Town Hall). There is the potential it may be present on industrial property as well.
* Subsurface sampling methods should include the ability to track contamination to depths greater than 18 inches. Gamma-ray survey meters are limited to a detection

depth of only about 3 feet. One Pines citizen took a picture which has been provided to USEPA5 showing what appears to be bottom ash in a layer 4 feet thick beneath the street blacktop. A practical method for subsurface measurements would be to drill a bore hole and then lower a gamma probe to regular depths (e.g., 6 inches, 12 inches, etc.) to get a subsurface profile. USEPA5 has used this method with good results.

* It is agreed that the lateral extent of contamination needs to be determined. USEPA5 has used at least two practical methods, (1) Walk all properties with a gamma survey meter using GPS equipment and a data logger to develop property specific count rate contour maps and (2) perform an aerial flyover with gamma survey equipment. An essential necessity is to assure all soil contaminated properties are identified.
* One critical potential that could bring subsurface soil to the surface is the introduction of additional water lines and of new sewer lines by the Town of Pines. These could have health consequences for workers and citizens alike during installation.
* Property sampling should include provisions for dose rate measurements as the risk from external radiation exposure might need to be included in HHRA calculations.

Page 10, Comment #23 - The PINES Group agrees that property specific variations in the amount of CCB makes collecting soil from only three properties problematic. The properties potentially to be surveyed need to be identified by a quantitative method. This will require direct sampling. Gamma count rates are a quick, quantitative, method that can be correlated with the amount of CCB present.

The PINES Group agrees that laboratory measurements are essential.

* These must include isotopic identities and isotopic concentrations. Foremostly, it has not been determined that the elevated count rates found by the PINES 2009 and 2012 surveys are attributable to coal ash. Isotopic identities can resolve this.
* Moreover, because of the potential use of 40 CFR 192 as relevant and appropriate, radium-226 and radium-228 concentrations must be quantified for decision making.
* It is agreed that laboratory results are necessary if a correlation of radiation count rate and radium soil concentration is to be developed.
* USEPA5 has used small-bottle samples for field verification of cleanup levels. This required a correlation between radium concentration and meter readings. Should it not be possible to correlate count rate to radium concentration, consideration of this method might result be a useful substitute and result in substantial time savings if cleanups are required.

Page 11, Comment #24 - The PINES Group agrees that activity-specific locations may need focused sampling. Two such areas where the 2009 and 2012 PINES surveys showed elevated count rates are the play area at the Town Hall and Illinois Avenue where leaves were stored for composting.

Page 11, Comment #25

* It is unclear whether this method applies to an exploratory survey or to a verification survey. USEPA5 has used this method post cleanup with the adaptation that the site is gamma surveyed over the full site and then 5 composite samples are taken in each 100 m^2 unit (4 taken half way between the corners and the center, 1 taken at the center).
* The PINES Group agrees with using 100 m^2 units for post cleanup sampling with the caveat that they be square units. Irregularly shaped units should not be created to gerrymander the result.
* The PINES Group appreciates USEPA5's statement that "Residential lots investigated should include those of interest to the PINES Group and the Town of Pines Council."
* It is not likely that a cleanup criterion would be 10 pCi/g, but, for Pines, it would be approximately 6.5 pCi/g. It is believed that the State of Illinois has three radium calibration blocks, with low, medium, high radium concentrations. These have been used to get a straight line relationship between count rate and concentration, which can then be used to select the count rate corresponding to the cleanup criterion. This would be a more defensible method rather than using a single calibration block.
* The PINES Group would be willing to dispense with gamma dose rate measurements at 0.3 meters. Measurements at 1 meter are about half way up the height of a person and seem to represent an "average" dose rate between the toes and the top of the head.
* The PINES Group foresees that exploratory property sampling with many triangular grids, each with at least 3 samples at 6, 12, and 18 inches depth, will lead to a tremendous number of lab samples. The PINES Group feels it would be easier to find the peak gamma count rate on the property, take a single boring at this location, then measure the gamma count rate every 6 inches of depth until the subsurface background was reached. A single soil sample could then be taken from where the subsurface count rate was greatest. This would require establishing the background count rate beforehand, a single number for all borings.
* The PINES Group would support establishing a Background Reference Area.

Page 13, Comment #26 - The PINES Group supports the directive to take aliquots from 6 inch depths. Most significantly this corresponds to protocols for 40 CFR 192 which may be an ARAR. Moreover, the sample is not diluted for the 40 CFR 192 criterion. Where samples are taken from a 6 inch depth, they can be taken from mid-depth (e.g., 3, 9, 15 inches, etc.).

Page 13 Comment #27 - The PINES Group does not support measurements of Total Uranium for several reasons. Isotopic uranium values provide confirmatory information. If the
U-238 : U-234 ratio is 1 the sample is probably in secular equilibrium and has not been technologically altered. If the U-235 : U-238 ratio is 0.47 by activity the sample is probably naturally occurring and has not been technologically altered. With total uranium values, these tests are not possible. All uranium data should be reported by isotope, with no data reported as total uranium.

The PINES Group does not support the use of ICP-MS detectors for radiation measurements. Most radiation laboratories, such as USEPA's National Air and Radiation Environmental Laboratory, use HPGe gamma spectroscopy. It is essential to have a consistency (or at least a compatibility) of methods. ICP-MS does not give isotopic uranium concentrations. Experience has shown that ICP-MS radiation results do not agree with HPGe results. To standardize data and to avoid data conflicts, the PINES Group advocates using only HPGe detectors.

The PINES Group advocates field screening all soil samples with a quarter inch screen to separate background soil and contaminants from stones and other extraneous objects. All vegetation should also be removed. Whatever is neither background soil nor potential contaminants should be discarded.

The PINES Group advocates at least 10% field duplicate samples and 10% lab duplicate samples. The former would mean collecting twice as many samples at every tenth site, thoroughly homogenizing them, and the sending two separate samples to the lab for independent analysis. The latter would mean recounting every tenth sample in the lab.

All laboratory samples that involve radium must be allowed to sit for at least 21 days for decay product ingrowth. This will contribute to consistency when different labs are used.

The PINES Group anticipates recommending properties to USEPA5 for measurements where it feels these are critical. The PINES Group reserves the right to observe all surveys and sample collections covered by the extended sample collection of the FS, including the right to enter the all properties and to take independent measurements. This right could apply to authorized representatives of the PINES Group. It is expected that the PINES Group will split soil samples and have them analyzed independently using non-TAP funds.